

-13-

CLAIMS

1. (Amended) A process for producing a fluoroalkylcarboxylic acid of the formula R_fCOOH wherein R_f is a C_{1-16} fluoroalkyl group, which comprises oxidizing a fluoroalkyl alcohol of the formula R_fCH_2OH wherein R_f is as defined above using nitric acid and feeding oxygen into the reaction system during the oxidation reaction.

2. The process according to claim 1 wherein the oxidation is carried out in the presence of a metal catalyst.

3. The process according to claim 2 wherein the metal catalyst is at least one metal selected from the group consisting of iron, nickel, copper and vanadium, or at least one oxide or salt of these metals.

4. The process according to ~~any one of claims 1-3~~ wherein a fluoroalkylcarboxylic acid of the formula R_fCOOH wherein R_f is as defined above is present in the reaction system at the beginning of the reaction.

5. (Cancelled)

6. (Amended) The process according to ~~any one of claims 1-4~~ wherein oxygen is fed into the reaction system to reduce the required amount of nitric acid to a stoichiometric amount or less relative to the fluoroalkyl alcohol of the formula R_fCH_2OH wherein R_f is as defined above.

acid (114.55 g, 1.00 mole) and $\text{FeCl}_2 \cdot n\text{H}_2\text{O}$ (0.0066 g) were placed into an autoclave equipped with a 1000-ml glass pressure vessel, a fluoroplastic upper cover, stirring blades, a thermometer protection tube, a fluoroplastic insert tube, a pressure gauge, a safety valve and a supply line from an oxygen bomb. The mixture was stirred with heating, upon which reaction pressure began to increase. 3.1 hours after the start of heating, the reaction temperature rose to 125°C and the reaction pressure increased to 0.6 MPa (gauge pressure; the same hereinafter). From that time, oxygen was fed into the gas phase at various times in an amount of 0.35 g (11.00 mmoles) per time, whereby the reaction pressure was controlled to 0.6 MPa. 6.5 hours after the start of heating, complete consumption of the starting fluoroalkyl alcohol was confirmed by gas chromatography to confirm the completion of the reaction [$\text{H}(\text{CF}_2)_6\text{CH}_2\text{OH}$ conversion: 100.0 g.c.% (gas chromatography %; the same hereinafter); $\text{H}(\text{CF}_2)_6\text{COOH}$ selectivity: 100.0 g.c.%]. In total, 46.72 g (1.46 moles) of oxygen was fed into the gas phase by the end of the reaction. After completion of the reaction, oxygen was continuously supplied so as to convert residual nitrogen oxides into nitric acid. Then the residual pressure was released. Because of the reaction mixture being provided in the form of two layers of liquids,

Sub-B1

CONFIDENTIAL